

REDESCRIPTION OF MALES, BIOLOGICAL NOTES, AND IDENTIFICATION OF AMERICAN *ACANTHOCHALCIS* (HYMENOPTERA: CHALCIDIDAE)¹

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ABSTRACT: Males of *Acanthochalcis nigricans* and *A. unispinosa* are redescribed, voucher specimens designated, diagnostic characters illustrated, and a key to the American species presented. Characters to distinguish *Acanthochalcis* from other Nearctic Chalcididae are presented. The taxonomic and biological information on *Acanthochalcis* is summarized and new hosts, rearings, and floral visitations are recorded. A third species, *A. gigas*, is known from Madagascar.

Acanthochalcis are the largest chalcidids in the Nearctic region with males ranging in length from 6 to 11 mm and females from 7 to 24 mm. These wasps are black with reddish brown to brown legs and smokey or yellowish wings. Females are unique among Nearctic Chalcididae in having a spear-like ovipositor which projects posteriorly a distance equal to or greater than the length of the abdomen. *Acanthochalcis* are uncommonly collected, though have been taken by sweeping flowering vegetation and netting individuals around host inhabiting trees and shrubs.

To improve the taxonomic information on American *Acanthochalcis*, the males of *A. nigricans* Cameron and *A. unispinosa* Girault are redescribed, the species distinguished in a key, the taxonomic history reviewed, and characters presented to distinguish this genus from other Nearctic Chalcididae. This information improves the brief original male descriptions and is needed to identify *Acanthochalcis* and its American species. Male voucher specimens are deposited with their female holotype for use in future studies. The redescriptions will also be useful to delineate the presently unknown male of *A. gigas* Steffan (from Madagascar), and help establish the relationship between American and Madagascan *Acanthochalcis*.

Both American *Acanthochalcis* are parasitoids of buprestid beetle larvae which inhabit oak trees (*Quercus* spp.) (Halstead and Haines 1985); however, new information indicates buprestid hosts in saltbush (*Atriplex* sp.), ocotillo (*Fouquieria splendens*), and *Baccharis* sp. Overall, the biological information on *Acanthochalcis* is very limited. This information is summarized and new host, rearing, and floral visitation records

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are presented to encourage and aid future research.

Steffan (1959) recognized in *Acanthochalcis* two American species *A. nigricans* (Cameron 1884) and *A. unispinosa* (Girault 1917, 1921; in Gordh, *et al.* 1979) and *A. gigas* (Steffan 1950) from Madagascar. Drawings of the apex of both the abdomen and scutellum for *nigricans* were presented. Characters for the previously unknown males of *A. nigricans* and *A. unispinosa* were presented in a key. The male of *A. gigas* is unknown. Steffan also proposed subgenera, placing *nigricans* in *Acanthochalcis*, *unispinosa* in *Belochalcis*, and *gigas* in *Trypanochalcis*, but the designation of subgenera for each species seems unwarranted on the basis of the few species and at least for *nigricans* and *unispinosa* on morphological grounds.

Acanthochalcis, the only member of the tribe Cratocentrini in the Nearctic region, may be distinguished from other Nearctic Chalcididae by the following characters: head without horns on dorsal area of frons, antennae inserted in center of frons, abdomen sessile, hindtibiae with one apical spur and the apex obliquely sinuate (Brachymerinae); postmarginal vein much longer than marginal vein, scrobe cavity almost touching vertex of clypeus, mesopleuron deeply excavated by a acetabulum which receives the mesotibia and mesofemur in response, (♀) with 4 visible tergites, (♂) with 7 visible tergites (Cratocentrini); propodeum produced laterally into a flattened triangular mass (dorsal view).

Key to American species of *Acanthochalcis* Cameron

1. Propodeum dorsally with a median tooth (Fig. 9), in lateral view with posterior margin truncate; hindfemur narrowly ovoid (Fig. 4); (♀) epipygidium with ventral margin straight; (♂) abdomen dorsoventrally flattened (Figs. 2, 6) *unispinosa* Girault
- 1'. Propodeum dorsally without a tooth, in lateral view projecting posteriorly as a triangular tooth which overhangs base of hindcoxae (Fig. 8); hindfemur broadly ovoid (Fig. 3); (♀) epipygidium with ventral margin toothed (Fig. 7); (♂) abdomen oval (Figs. 1, 5) *nigricans* Cameron

Acanthochalcis nigricans Cameron, Male Redescription

Figures 1, 3, 5, 7, 8

Type-species ♀ (Cameron 1884), ♂ description (Steffan 1959).

Length: 11mm. Black with labrum clypeus, coxae, trochanters, femora (hindfemora apically and basally), tibiae, tarsi, tergites 1-5 posteriorly and ventrally, sternites 1-6 posteriorly, epipygidium, hypopygidium, and hindwing vention reddish brown. Pubescence white, dense patches on axillae posteriorly, propodeum laterally, hindcoxae dorsally, and submedian length of tergite 6.

Pronotum with anterior, dorsolateral margin rounded, posterior margin emarginate; propodeum laterally produced as a flat triangular posterior projection, in lateral view pos-

terior margin produced as a tooth, with a strong transverse basal carina and two longitudinal submedian carina, rectangular area between these carinae polished; hindfemur broadly ovoid, 11 teeth along ventral margin, a sharp tooth on inside at base, outer and inner surface polished, setal depressions separated by a distance equal to their own diameter, inner surface with sparse setal depressions; hindcoxa length 3X its greatest width, inner surface with sparse setal depressions; forewing infusate, apical margin with a darkened band; hindwing hyaline, slightly infusate apically; stigma with a prominent uncus; postmarginal vein 2.5X length of marginal vein.

Abdomen sessile, ovate, dorsal margin convex in lateral view; tergite 2 (T2) with 3-4 punctures at median length; tergites laterally perpendicular to body axis, with dense setigerous punctures except for coriaceous band along posterior and ventral margins of T1-5; epipygidium triangular, matte, basal 1/6 punctate, with a flat median and carinate sub-lateral ridge; sternites convex, sternites 1-5 (S1-5) punctate medially, S6 punctate throughout.

Types. — Holotype female collected from Sonora, Mexico; type in the British Museum of Natural History (BMNH). I designate a male voucher specimen with a red label: "Voucher Specimen, Male redescription, *Acanthochalcis nigricans* Cameron, det. J.A. Halstead 1987" with data: "Arizona, Pima Co., Madera Canyon, VIII-24-1977, *Prosopis juliflora*, R.W. Brooks." Voucher male deposited in BMNH.

Variation. — Males 8-11 mm, usually about 10 mm. Females 7-24 mm, usually about 20 mm. Halstead (1987) noted three rubinistic colored (i.e., typically black areas are reddish brown) males from El Salvador. A male from 23 mi S. Matias Romero, Oaxaca, Mexico, IV-22-1962, F.D. Parker (University of California Davis collection) is also this color.

Host/rearings. — A probable host *Chrysobothris femorata* (Olivier) (Coleoptera: Buprestidae) was discussed by Halstead and Haines (1985) and additional probable hosts *Dicerca horni* Crotch or *Polycesta californica* (LeConte) (both Coleoptera: Buprestidae) in interior live oak (*Quercus wislizenii*) suggested. Label data on specimens denotes the following host associations or rearings. Three females (Palm Springs, San Bernardino Co., California) were reared from *Chrysobothris* sp. in the roots of saltbush (*Atriplex* sp.). A female (6 mi E. of Apache Junction on Hwy. 88, Maricopa Co., Arizona) was reared from *Baccharis* sp. A female (Tucson, Pima Co., Arizona) was associated with *Chrysobothris edwardsi* Horn (Buprestidae) in a dead ocotillo (*Fouquieria splendens*).

Floral visitations/possible host substrates. — *Atriplex*, *Baccharis glutinosa*, *B. neglecta*, *Bebbia juncea*, *Encelia* sp., *Encelia farinosa*, *Flourensia cernua* associated with *Tachardella cornuta* (Homoptera: Lacciferidae), *Helianthus annuus*, *Koeberlinia*, *Larrea*, *Lupinus inflatus*, *Placelia distans*, *Prosopis chilensis*, *P. juliflora*, *Sphaeralcea*, and *Stanleya pinnata*.

Distribution. — California east to Kansas, south through Mexico to Costa Rica (Halstead 1987).

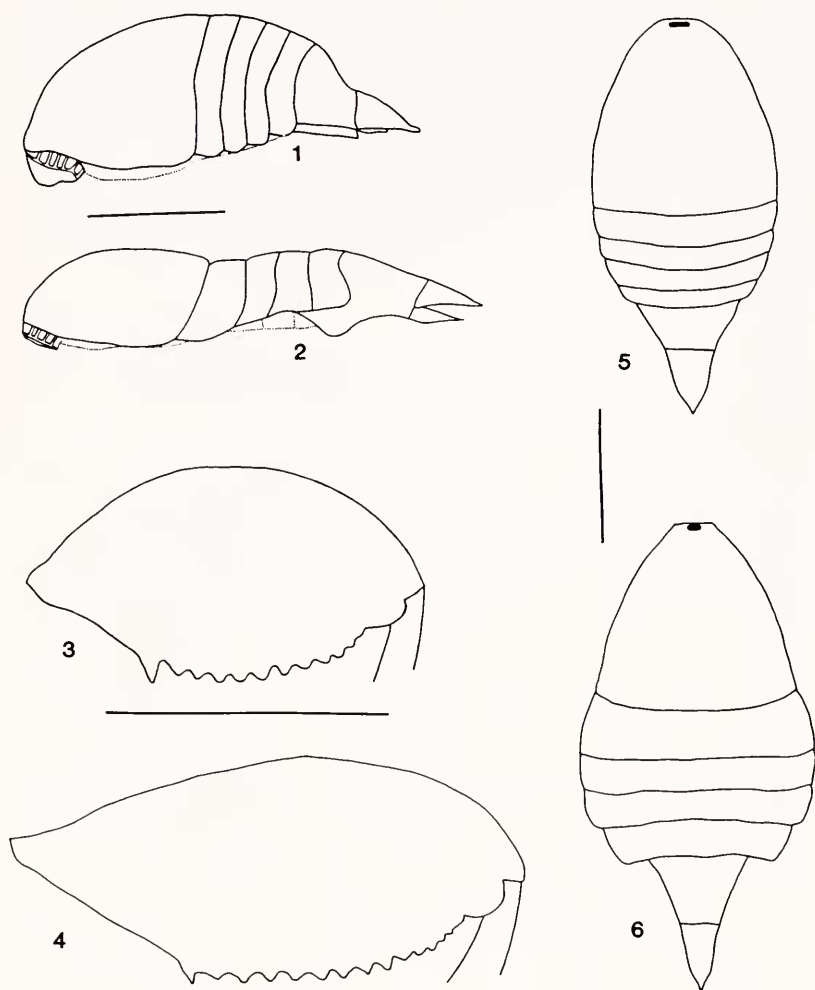
Acanthochalcis unispinosa Girault, Male Redescription

Figures 2, 4, 6, 9

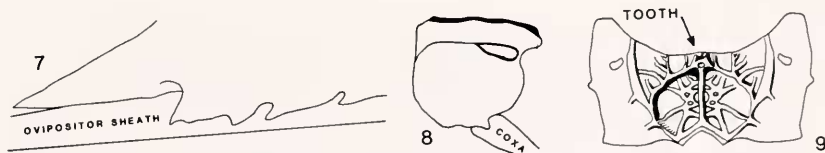
Original description ♀ (Girault 1917, 1921). ♂ description (Steffan 1959).

Length 11 mm. Black with tegulae, tibiae, tarsi, and posterior and ventral margins of T1-5 brown.

Pronotum with anterior, dorsolateral margin squared, posterior margin deeply emarginate; propodeum laterally produced as a flat triangular posterior projection, though not as acute posteriorly as in *nigricans*; in lateral view posterior margin squared, with a transverse medially arching carina and a strong median carina which meet to form a raised acute toothlike process, area between these carina with a reticulation of carinae; hindfemur narrowly ovoid, ventral margin with 12 teeth, without a tooth on inside at base, outer and inner surface with dense setal depressions and densely setose; hindcoxa length 5X its



Figs. 1-6. *Acanthochalcis* spp. (males). *A. nigricans*: 1, Abdomen, lateral view; 3, Hindfemur, lateral view; 5, Abdomen, dorsal view. *A. unispinosa*: 2, Abdomen, lateral view; 4 Hindfemur, lateral view; 6, Abdomen, dorsal view. Scale lines 2.0 mm.



Figs. 7-8. *Acanthochalcis nigricans*: 7, epipygidium of female, lateral view; 8, propodeum and metapleuron, lateral view. Fig. 9. *Acanthochalcis unispinosa*, propodeum, only carinae in medical area drawn, dorsal view.

greatest width, inner surface with dense setal depressions and apical 1/3 with prominent transverse striae; forewing infusate, with a yellow tint; hindwing infusate, darker from under marginal vein to apex; stigma with a prominent uncus; postmarginal vein 2X length of marginal vein.

Abdomen sessile, dorsoventrally compressed, dorsal margin flat in lateral view; T2 with 6-7 punctures at median length; tergites (especially T2-5) flaring outward from body axis, with dense setigerous punctures except for a smooth band along posterior and ventral margins of T1-6; epipygidium triangular, coriaceous, basal 1/4 punctate, with a median and submedian carina; sternites convex, punctures on S2-5 originating from anterior margin and forming a half circle shaped area; S1 and S6 punctate medially.

Types. — Holotype female collected from Belfrage, Texas; type in the United States Museum of Natural History (USNM). I designate a male voucher specimen with red label: "Voucher Specimen, Male Redescription, *Acanthochalcis unispinosa* Girault, det. J.A. Halstead 1987" with data: "CA. Tulare Co., Ash Mtn. Kaweah Powerhouse #3, VI-19-1982, coll. R.D. Haines." Voucher male deposited in USNM.

Variation. — Males 6-11 mm, usually about 10 mm. Females 17-24 mm, usually about 21 mm.

Host/rearings. — A probable host *Polycesta californica* (Coleoptera: Buprestidae) in Valley Oak (*Quercus lobata*) was suggested by Halstead and Haines (1985). Label data on specimens denotes a rearing and a possible host substrate. A female (Pinon Flats, San Diego Co. California) was reared from scrub oak (*Quercus dumosa*). A female (near Eskimizin, Pima Co., Arizona) was flying about dead limbs of palo verde (*Cercidium* sp.).

Distribution. — California, Arizona, Texas.

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INSECT FIELD DAY

The fourth annual Insect Field Day sponsored by the American Entomological Society and the Young Entomologists' Society will be held Saturday June 23, 1990 from 9 to 5 at the Fair Hill Nature Center in Fair Hill, Maryland. Entomologists, young and old, amateur or professional and their friends are invited to join in a day of collecting, identifying, sharing, and socializing. For registration forms, directions, program, and other information write to: Insect Field Day, American Entomological Society, Academy of Natural Sciences, 19th & Race Sts., Philadelphia, PA 19103.